

Improved Sonic Drilling to be used for Hanford Cleanup

RICHLAND, Wash., April 17, 1995 -- Drilling in part of Hanford's rocky, sandy, contaminated soil can now be done three times faster and two-thirds cheaper because of an innovative drilling technique that uses resonant energy similar to sound waves. Improvements in sonic drilling resulted from a Cooperative Research and Development Agreement (CRADA) that was established between Water Development Corporation and the U.S. Department of Energy's Office of Technology Development in 1993.

According to Bob Rosselli, Assistant Manager for Technical Management, "The benefits gained through the partnership with Water Development and the Office of Technology Development will be expanded by facilitating the national use of the technology throughout the Department of Energy, other federal agencies, and industrial use."

Sonic drilling was invented in the 1950s but was plagued with technical problems. When it was first tested at Hanford in 1991, sonic drills suffered a 50 percent equipment failure rate. Even so, drilling was two to three times faster in many cases, so the technology seemed promising. The method employs low-frequency, oscillating sound waves to help the drill bit cut through the earth.

"This is just what we look for in the Office of Technology Development," says Lance Mamiya, program engineer for the U.S. Department of Energy at the Hanford Site. "I attribute the success of the program to the dedicated team from Pacific Northwest Laboratory, Westinghouse Hanford Company, Water Development Corporation, Bechtel Hanford, Inc., and DOE Headquarters. The team knew the potential was there for a great return on investment if we could overcome the technical problems. We felt it was well worth the time and money to make it reliable for DOE cleanup operations both at Hanford and across the entire complex."

Well drilling is one of the most useful and important techniques for understanding the nature of contamination in soil. Analyses can be done on soil retrieved from the drilling and instruments can be used in the hole to detect chemical and radioactive elements. Drilling also provides the primary access for cleanup of contaminated groundwater.

Drilling can be very costly and time-consuming when going through contaminated soils such as those found at the Hanford Site in southeastern Washington state. The 1,450-square-kilometer (560-square-mile) site is home of two-thirds of the nation's high-level radioactive defense waste.

"By using the improved sonic drilling system, costs can be cut significantly over conventional cable tool drilling methods," says Greg McLellan, Westinghouse Hanford's lead engineer on the project.

In a comment from Don Moak, another key contributor to the drilling project, "The success of the sonic drilling program is due to a dedicated team of believers...especially those in the field getting dirty and cussing at broken parts and cheering the successes. The brilliant leadership and resourcefulness of Jeff Barrow at Water Development Corporation was an essential ingredient to this integrated team. There still is work to be done to increase the efficiencies of the system, but it is evident that the ResonantSonic drilling method is one of the key breakthroughs in drilling technology at this time."

Based on the high cost of conventional drilling, alternative methods were identified as a high priority for technology development several years ago. "Resonant Sonic drilling is a great example of the success of the development program focused on solving real problems," says Tom Brouns, Pacific Northwest Laboratory program manager for the drilling development effort. "As a result, we have a better

technology, a new company in the Tri-Cities, and the potential for faster cleanup of the site."

Water Development Corporation of Woodland, California, is the licensed owner of ResonantSonic drilling, and the 1993 CRADA was between the U.S. Department of Energy and Pacific Northwest Laboratory. Westinghouse Hanford Company provided the technical management for the CRADA. Success comes in the form of drilling rates two to four times faster than conventional cable tool methods, which translates into time and cost savings. A clear benefit of the faster drilling is the reduced time workers must spend in a contaminated area.

Bechtel Hanford, Inc., the site's environmental cleanup contractor, will be putting the improved sonic drill to use this month. Water Development Corp. now has a facility in the Tri-Cities as a base of operations for their ResonantSonic Technology Development Center. According to Rob Dobush, Vice President of Operations for Water Development Corporation, "Our new contract with Bechtel Hanford, Inc. will create a number of new jobs, and within the year, we hope to have several new spin-off sonic technologies that will help Hanford save costs in assessing their subsurface contamination problems. This project has been a great example of public-private partnership working together to reduce the costs to the taxpayers and actually achieving that goal."

#

For more information contact:

Keith V. Taylor (509) 376-2282

Department of Energy Office of External Affairs

RL-95-034